131 Habitat.- Deltoid-shaped wedge of territory
133 claimed by Tübatulabal and Palagewan (fig. 1) consisted roughly of natural drainage area of Kern r. and its tributaries from river's source near Mt. Whitney to w. end of Kern canyon 14 mi. NE of Bakersfield; this area comprises some 1300 sq. mi., and is mainly mountainous with elevation between 2500-14500 ft. The n. 2 3 of area lies in high Sierras, with many mt. meadows
●[312] and numerous peaks of 6000 ft. and more; it is well-watered, both Kern and South Fork of Kern being perennial streams, flowing southward at bottom of deep narrow canyons in parallel courses 20 mi. apart. Lawson gives 2 excellent views of canyon of unaugmented Kern and Little Kern plateau, showing character of region (Lawson, pl. 41a, b).

133 In s. third of area (fig. 1) mountainous character of country continues save for 3 narrow valleys, each drained by a stream, which ray out N-NE, E-NE, S-SW from common flood plain at confluence of unaugmented Kern and South Fork of Kern r. The n. valley is that of Kern r.; this flood-plain valley extends N, strewn with boulders and gravel, up unaugmented Kern for distance of 10 mi. from confluence, its breadth diminishing from 1 1/2 mi. to few hundred feet. The e. valley, that of South Fork of Kern r., extends E from confluence for 15 mi., with width in its
[134] lower part of more than one mile. In this valley, flood-plain silts and sands mantle stream gravel in large part and make agricultural land. The s. valley, or Hot Springs valley, is a little over 4 mi. long and about 1 mi. wide; it is divided longitudinally into 2 parts by low median ridge of
[312] granitic rock. On e. side of this ridge is flat-bottomed alluviated plain from 1 2-3 4 mi. wide; in this plain are situated several hot springs. On w. side of median ridge in Hot Springs valley is tortuous channel of Kern r.; stream enters this rocky channel through streamworn notch in n. end of median ridge immediately at junction of South Fork and Kern r. Alluvium which forms floor of Hot Springs valley derived from 3 incoming streams, largest of which is Erskine creek which enters valley at s.e. corner and there builds up notable fan which spreads out over its entire width. Second stream is Vaughn creek which centers at s. end and gives rise to less important fan which is confluent with that of Erskine creek; smallest creek is that which drains an incipient canyon in face of steep mt. slope which bounds valley on e. side between Erskine creek and South Fork of Kern r. (Lawson, 399). Lawson gives several photographs of Hot Springs valley and excellent view looking up South Fork valley from confluence of South Fork and Kern r. (Lawson, pls. 39a, b, 40a, b).

133 Near s. end of Hot Springs valley Kern r. enters precipitous gorge through which river rushes over huge boulders, creating continuous rapids for its 25-mi. course through gorge. There are no outstanding cataracts or falls in

133 river as it flows through gorge, but from e. mouth of gorge for 60 mi. downstream there is drop of 50 ft. per mi. in river's course. There are 2 periods of high water in Kern r.; one during winter rain-flood from Jan.-March, second during summer snow-flood, from May-July; lowest water occurs in October (Gifford and Schenck, 17). Minimum flow of Kern in dry season 2700-3000 cu. ft. per second, in season greatest capacity over 18000 cu. ft. per second (Pen Pictures, 248).

133 Three valleys lie at 2500-3000 ft. elevation.
132 They are in a climatic province which is semi-arid, with mesothermal temperature and summer deficiency of rainfall (Thornthwaite, pl. 3). Temperatures from 110-115° F. not uncommon in July-August; winters not severe, but generally some snow falls in valleys, more on foothills, and there are always heavy snows in mts. Precipitation records for Kernville, in Kern valley, are:

Year	Rainfall (in inches)	No rainfall
1924	6.48	May-September (inclusive)
1925	7.43	September
1926	11.66	June-September (inclusive)
1927	10.37	May-September (inclusive)
1928	6.47	June-September (inclusive)
1929	5.04	July, Aug., Oct.-Dec.
1930	6.97 plus 19 in. snow	June-October (inclusive)
1931	9.92	May, September
1932	7.34	July-November (inclusive)

●[312] Previous to white settlement and diversion of water for agriculture, South Fork valley contained 2 large lakes, W of Onyx, NW of Weldon on Jesus ranch (SM). In 1776 Garcés, writing of un-
[175] augmented Kern near Kernville, says, "On this famous river, which I named Rio de San Pelipe, there are abundant pastures, famous woods, and much irrigated ground (tierra de regadio)" (Garcés, 282). In foothills which enclose valleys are numerous hot and cold springs and intermittently flowing streams.

137 Vegetation of 3 valleys and lower foothill regions mixed; Shantz and Zon include valleys in chaparral area; my botanical collections from valley-foothill region contain specimens from desert, foothill, and Great Basin floral areas. This mixed vegetation area extends in E-W line across s. base of Tübatulabal territory. N of it are several different forest belts extending in N-S line; on w. edge of area along Greenhorn mts., is spruce-fir strip; E of this along canyon of unaugmented Kern strip of yellow pine-sugar pine forest; E of this another spruce-fir strip and finally on e. edge of Tübatulabal territory strip of piñon-juniper forest (Shantz and Zon). In extreme n. part of Tübatulabal area, on w. slope of Sierras, is found subalpine forest and, at higher altitudes, alpine communities (Klyver, 8). In terms of Merriam's life zones, using tree indicators of Grinnell and Storer (Grinnell and

251 sweets made from cane, wild grapes, etc. Acorns
262 and piñons on other hand required shorter drying periods than any of above-mentioned foods, and furthermore, after gathering them, drying could be postponed for few days, if necessary, without danger of their spoiling.

● 312 Control of water.- Tübatulabal controlled water to degree of making ponds (pacu'a·t) near sweat houses; these ponds large enough for person to jump into after taking sweat bath. Ponds dug out with stick (nahat, also used for cane); water run into them from near-by spring. Springs also dug out to obtain drinking water, but no boxing in of sides, as is done now (SM).

312 Patches of wild seeds never irrigated as among
177 neighboring Owens Valley Paiute (Steward, 1933, 247). An irrigation ditch, course of which is still traceable, formerly brought water from Canebrake canyon to former Indian settlement at mouth of Chimney canyon in arid e. end of South Fork valley. This ditch constructed by Koso Indian refugees who settled in Tübatulabal territory at this spot ca. 1863. At time of its construction white settlers had been ranching in South Fork valley nearly 20 years and ditch seems obviously native borrowing of white culture item.

231 Domesticated and captive animals.- Regarding
[262] possession of dogs (pungul, pet; pukubišt, specifically dog), and their use as food, PN, oldest informant, stated Tübatulabal had dogs and roasted them to eat, as Yokuts did (Kroeber, Handbook, 526), before whites entered region. She described native dogs as "small, white, short-haired"; denied they were procured from Mexicans or other outside sources.

231 SM, however, said Tübatulabal did not possess
262 dogs until whites brought them in. His statements
177 at different times on use of dog for food contradictory; once he said Tübatulabal roasted and ate dogs after latter introduced, but subsequently stated dogs never eaten. He knew of use of dogs by Yokuts, stating: "The Bakersfield Indians always had dogs and ate them; they'd buy dogs from each other for (the equivalent of) $2 apiece." FP said Tübatulabal "had dogs pretty early, but got them from whites; after they got dogs they did not eat them." These statements reconcilable because they probably reflect cultural divergency between Palagewan and Tübatulabal bands; Palagewan, situated nearest Yokuts, in all likelihood most affected by Yokuts customs. PN's mother member of Palagewan group; PN's second husband a Yokuts; in discussing dog PN probably had Palagewan in mind, although this point not specifically stated at time. Reason for SM's confused statements may also have been this cultural divergency, but in statement of FP, whose affiliations lay with Tübatulabal and Koso to E, we have clear-cut denial of trait.

000 Cave, now closed, on Jesus Miranda's ranch